

## BARBECUE GRILL WITH SMOKE GENERATOR

### BACKGROUND OF THE INVENTION

[0001] This invention relates to a barbecue grill with smoke generator.

[0002] A conventional charcoal grill comprises a metal housing for receiving charcoal briquettes and a cooking grate positioned over the briquettes for receiving food items to be cooked. The burning charcoal briquettes emit smoke that imparts a characteristic barbecue flavor to the food items being cooked.

[0003] A conventional gas or electric barbecue grill comprises a metal housing and a gas burner or electrical resistance heating element supported within the housing beneath a cooking grate. Sear bars may be located between the heat source (the gas burner or electrical resistance heating element) and the cooking grate for receiving and evaporating grease that falls from the food on the cooking grate.

[0004] The conventional gas or electric grill is generally more convenient and less expensive to operate than a conventional charcoal grill but is subject to the disadvantage that the heat source does not emit smoke that can impart flavor to the food items being cooked.

[0005] It is known to use wood pellets as fuel in a barbecue grill. When burned, wood pellets, like charcoal briquettes, emit smoke that imparts additional flavor to the food items being cooked. In this case, the barbecue grill may include a fire pot and an auger mechanism for feeding pellets from a hopper to the fire pot for burning to provide the heat for cooking. However, in order to generate sufficient heat for cooking food the wood pellets must be ignited and burned at a high temperature. This causes the wood pellets to be consumed relatively quickly and thus a large quantity of wood pellets must be used for cooking and a less than optimum amount of smoke is emitted from the wood pellets.

## SUMMARY OF THE INVENTION

[0006] In accordance with the present invention there is provided a barbeque grill comprising a main housing having an interior space, a cooking grate within the interior space for receiving food items to be cooked, a primary heat source below the cooking grate for transmitting heat to food items located on the cooking grate, a secondary housing structure within the interior space, a secondary heat source below the secondary housing for transmitting heat to the secondary housing, and a container for receiving wood pellets, said container being accessible from the exterior of the main housing.

[0007] The present invention utilizes a secondary heat source for heating wood pellets. The wood pellets are heated to a lower temperature than is necessary to ignite the wood pellets such that heat emitted by the pellets could be used for safely cooking food items on the grate. The temperature is chosen so the wood pellets emit smoke over a longer period of time than if they were exposed to a higher temperature and ignited. This causes the wood pellets to be consumed at a more efficient rate than they would be if the wood pellets were used as the primary fuel for cooking, and thus provides the advantages of added flavor to the food items that is gained from wood pellet or charcoal briquette cooking at a cost closer to that of using a gas or electric grill.

## BRIEF DESCRIPTION OF THE DRAWINGS

[0008] For a better understanding of the invention, and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which

FIG. 1 is a sectional view of a first barbecue grill embodying the present invention,

FIG. 2 is an enlarged perspective view of a first smoke generator included in the FIG. 1 grill,

FIG. 3 is a longitudinal sectional view of the smoke generator,

FIG. 4 is an enlarged perspective view of a second smoke generator included in the FIG. 1 grill,

FIG. 5 is a sectional view of a second barbecue grill embodying the present invention,

FIG. 6 is an enlarged perspective view of a third smoke generator included in the FIG. 5 barbecue grill,

FIG. 6A-6C are longitudinal views of three configurations of the third smoke generator.

#### DETAILED DESCRIPTION

[0009] Referring to FIG. 1, the illustrated barbecue grill comprises a main or lower housing 4, a primary heat source 8, a cooking grate 12, sear bars 16 disposed between the heat source and the cooking grate and a hood or upper housing 20 that is hinged to the lower housing so that it can be pivoted between a lowered position, shown in FIG. 1, and a raised position, in which it allows access to food items located on the cooking grate.

[0010] In addition, the lower housing 4 contains a smoke generator 24 located between the sear bars 16 and the rear wall 28 of the lower housing. Referring to FIGS. 2 and 3, the smoke generator comprises a secondary or inner housing 30 having a channel 32 at the bottom that extends from an inlet opening to a discharge opening. The secondary housing 30 includes a longitudinal wall 34 adjacent the rear sear bar and a top wall 36 that slopes downwards from the wall 34 towards the rear wall 28 of the lower housing and is formed with a vent slot 40 for allowing smoke to discharge from the secondary housing at the rear of the main housing. Accordingly, smoke leaving the secondary housing flows

upwards and over the food items, and not under the sear bars, to discharge from the barbecue grill.

[0011] A fuel hopper 56 communicates with the channel 32 through the inlet opening and a discharge drawer 64 is positioned adjacent the discharge opening of the secondary housing 30 and can be withdrawn from the main housing through an aperture in the wall of the main housing. A secondary heat source 68, which is preferably an electrical resistance heating element but may alternatively be a gas burner and is in any event independent of the primary heat source 8, is located beneath the secondary housing 30. Extending through the length of the channel is a means for moving the wood pellets 70 from the hopper 56, through the channel 32, to the discharge drawer 64. While the wood pellets are in the channel they are heated by the secondary heat source 68.

[0012] In one embodiment of the invention, the means for moving the wood pellets 70 is implemented by an auger 44 that extends through the channel 32 of the secondary housing. The auger is driven by a spring drive motor 48 that is located outside the main housing 4 and is provided with a handle 52 for winding up the motor. The spring drive motor 48 drives the auger 44, and rotation of the auger transfers wood pellets 70 from the hopper 56 into the channel 32 of the secondary housing and advances the pellets 70 slowly along the channel 32 towards the discharge drawer 64. The spring drive motor may also be provided with a latch for stopping operation of the motor.

[0013] In another embodiment of the invention, a saw-toothed plate 80, as shown in FIG. 4, may replace the auger 44 as the means for transporting the wood pellets through the channel 32. Wood pellets are deposited onto the plate 80 from the fuel hopper 56. An electric motor 84, connected to the plate via a linkage 88, causes the plate to oscillate horizontally. The teeth 96 on the

surface 92 of the plate form pockets 94 that the wood pellets rest in and the oscillating motion of the plate acts to impel or jog the wood pellets from pocket to pocket, the net direction of movement being from the inlet opening towards the discharge drawer 64. Referring to FIG. 4, as the plate 80 advances (moves in the direction of the discharge drawer 64) the steeper wall 100 of the pocket 94A pushes the wood pellets 70 forward. When the plate 80 withdraws, the wood pellets tend to slide over the less steep wall 104 of the pocket 94A and fall into the next pocket 94B. The rate of vibration of the plate 80 and the steepness of the teeth 96 are selected so the wood pellets 70 move at an optimum speed for generating smoke.

[0014] In operation, the user places a supply of wood pellets 70 in the hopper 56. Various blends of wood pellets that are suitable for generating wood flavored smoke in a barbecue grill are commercially available from Hutton Marketing LLC of St. Helens, Oregon. The user also energizes the main heat source 8. At a convenient time, which may be just before placing food items on the cooking grate 12, the user will activate the means for moving the wood pellets, and energize the secondary heat source 68. The speed of travel of the wood pellets 70 and the heat output of the secondary heat source 68 are selected so the wood pellets 70 are heated to a sufficient temperature to emit smoke but are not ignited. The smoke emitted from the wood pellets 70 escapes from the secondary housing through the slot 40 and accumulates above the sear bars 16. The food items being cooked on the cooking grate 12 are thereby exposed to the flavor-imparting smoke, enhancing the flavor of the food items.

[0015] In some instances, it is desirable that a large portion of the smoke generated by the wood chips be directed at only a portion of the cooking grate 12 and conversely, that little or no smoke come into contact with another portion of the cooking grate.

[0016] In a third embodiment of the invention, as shown in FIG. 6, the secondary housing 30 contains a removable hopper 110, located centrally with respect to the width of the main housing 4 and above the secondary heat source 68. A vane 114 in the secondary housing extends from above the hopper 110 upwards towards a vent 116. The vane 114 is pivotable, with respect to the secondary housing 30, via a knob 118 on the exterior of the main housing 4. By rotating the knob 118, the user can direct smoke from the wood pellets 70 to the right or left sides of the cooking grate, as shown in FIG. 6A and 6B respectively, or, by orienting the vane 114 in a central position, as shown in FIG. 6C, to the entire cooking grate.

[0017] It will be appreciated that the invention is not restricted to the particular embodiment that has been described, and that variations may be made therein without departing from the scope of the invention as defined in the appended claims and equivalents thereof. For example, in a modification of the FIG. 4 embodiment, the plate 80 may have a smooth upper surface but be inclined slightly downwards from the inlet opening towards the discharge opening so that vibration of the plate induces a net movement of the pellets in the direction of the discharge opening. Unless the context indicates otherwise, a reference in a claim to the number of instances of an element, be it a reference to one instance or more than one instance, requires at least the stated number of instances of the element but is not intended to exclude from the scope of the claim a structure or method having more instances of that element than stated.